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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/533,579	02/06/2007	Stuart Arthur Bateman	B-5691PCT 622624-8	4359
36716	7590	05/11/2010		
LADAS & PARRY 5670 WILSHIRE BOULEVARD, SUITE 2100 LOS ANGELES, CA 90036-5679			EXAMINER ABU ALI, SHUANGYI	
			ART UNIT	PAPER NUMBER
			1793	
			MAIL DATE	DELIVERY MODE
			05/11/2010	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/533,579	<b>Applicant(s)</b> BATEMAN ET AL.	
	<b>Examiner</b> SHUANGYI ABU ALI	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 February 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-69 is/are pending in the application.
- 4a) Of the above claim(s) 29-69 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election with traverse of claims 1-28 in the reply filed on 02/04/2010 is acknowledged. The traversal is on the ground(s) that The PCT allows the inclusion of the different categories in the same international application. This is not found persuasive because the applicant fails to present any argument about the prior art used by the Examiner lacking the common special feature of the claims.

The requirement is still deemed proper and is therefore made FINAL.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7, 11- 20 are rejected under 35 U.S.C. 102(b) as being JP09-227119 by Hideaki et al.

Regarding claim 1, Hideaki et al. disclose a composition comprising clay, such as smectite, being treated with melamine resin and a compound with onium compound.

(Abstract)

Melamine or ammonium compound are capable of decomposing or subliming endothermically, and/or releasing volatiles with low combustibility on decomposition

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and/or inducing charring of organic species during thermal decomposition or combustion.

Regarding claims 2, 11-13 and 15, Hideaki et al. disclose that the clay is balanced by alkali metal or alkaline earth metal cation ([0003]).

Regarding claims 3-5, Hideaki et al. disclose that the clay is smectite.

Regarding claims 6 and 7, Hideaki et al. disclose that the clay is montmorillonite([0010]).

Regarding claim 14, Hideaki et al. disclose that the clay has an ionic exchange equivalent of 85-130 millequivalent per 100 g. ([0011])

Regarding claim 16, Hideaki et al. disclose that the composition comprises of onium ion. ([0013])

Regarding claim 17, Hideaki et al. disclose that ammonium ion is ammonium derivative of an aliphatic.

Regarding claim 18-20, Hideaki et al. disclose that the resin is melamine resin comprising triazine ([0016]). ([0013])

Claims 1-7, 11-13, 16-21, 24 and 26-28 are rejected under 35 U.S.C. 102(b) as being anticipated by U. S. Patent No. 5, 770,644 to Yamamoto et al.

Regarding claims 1, 16-21, 24, and 26, Yamamoto et al. disclose a composition comprising layered silicate, quaternary onium( ammonium) compound, melamine cyanurate and silane( coupling agent).

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Melamine or ammonium compound are capable of decomposing or subliming endothermically, and/or releasing volatiles with low combustibility on decomposition and/or inducing charring of organic species during thermal decomposition or combustion. (col. 11, line 43-col12, line 3; col. 12, line 25; col. 10, lines 65)

Regarding claims 2-7, Yamamoto et al. disclose that the layered silicate can be selected from smectite clay such as montmorillonite et al. (col. 11, lines 42-50).

Regarding claim 11-13, Yamamoto et al. disclose that the silicate can be Li-type fluorine taeniolite(col. 11, lines 51-57).

Regarding claims 27-28, Yamamoto et al. disclose that the silane compound is functionalized halosilane with epoxy group (col. 10, lines 65-67).

Claims 1 -7, 11-13, 15-20 are rejected under 35 U.S.C. 102(b) as being anticipated by "Cyanate ester clay nanocomposites: synthesis and flammability studies" to Hunters

Regarding claim 1, Hunters disclose clay being expanded by the intercalants such as melamine salt and quaternary ammonium (experimental).

Melamine or ammonium compound are capable of decomposing or subliming endothermically, and/or releasing volatiles with low combustibility on decomposition and/or inducing charring of organic species during thermal decomposition or combustion.

Regarding claims 2-7 and 11-13, Hunter et al. disclose that the clay is sodium montmorillonit.

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Regarding claims 15-17, Hunter et al. disclose that the intercalant is alkyl ammonium.

Regarding claim 18-20, Hunters disclose that the intercalant is melamine.

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-7, 11-25 are rejected under 35 U.S.C. 102(e) as being anticipated by U. S. Patent Publication No. US20030209699 to Chyall.

Regarding claims 1 and 2, Chyall disclose a composition comprising ionic clay, an acid component, a nitrogen component and onium component, such as ammonium compound. The acid component can be melamine phosphate. The nitrogen source can be ammonium phosphate. (Abstract;[0016]-[0017],[0019],[0023],[0025] and [0028])

Melamine or ammonium compound are capable of decomposing or subliming endothermically, and/or releasing volatiles with low combustibility on decomposition and/or inducing charring of organic species during thermal decomposition or combustion.

Regarding claim 3, Chyall disclose that the clay is 2:1 type silicate structure ([0026]-[0027]).

Regarding claims 4-7, Chyall discloses that the clay is montmorillonite ([0026]-[0027], [0032])

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Regarding claims 11-13, Chyall disclose that the clay comprising sodium, calcium, magnesium ion. ([0032]).

Regarding claims 14 and 15, Chyall disclose that clay has a cation exchange ability of about 70 millequivalent per 100 g ([0026]).

Regarding claims 15 and 16, Chyall disclose that onium ion is intercalated with metal ion of the clay ([0028]).

Regarding claim 17, Chyall disclose that the onium ion is ammonium (col. 6, line 61)

Regarding claims 18-21, Chyall et al. disclose that melamine cyanurate is in the composition ([0025]).

Regarding claim 22-23, Chyall et al. disclose that the compound can be melamine polyphosphate ([0025]).

Regarding claims 24 and 25, Chyall disclose that the intercalation agent can be onium ion with alkyl group ([0028]).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent Publication No. US 20030209699 to Chyall, in view of U. S. Patent No. 4, 889, 885 to Usuki et al.

Regarding claims 8-9, Chyall et al. disclose a composition as applicant set forth in claim 4. They further disclose that the clay is preferred having an aspect ratio of more than 40 ( col. 6, lines 36). But they are silent that the clay has a thickness as applicant set forth in claims 8-10.

However, it would have been obvious to one of ordinary skill in the art at the time of invention by applicant to obtain the clay with the layer thickness as applicant set forth in claims 8-10, motivated by the fact that Usuki et al., also dawn to fire retardant composite, disclose that silicate layer with a thickness in the range of 0.7-1.2 imparts mechanical characteristics and heat resistance to the composite( col. 4, lines 29-33).



***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SHUANGYI ABU ALI whose telephone number is (571)272-6453. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Shuangyi Abu-Ali/  
Examiner, Art Unit 1793